

PATENT SPECIFICATION

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(54) DISPENSING GUN

(71) We, P. C. COX (MASTIC APPLIANCES) LIMITED, a Company registered under the laws of England, of Mill Lane, Newbury, Berkshire, do hereby declare this invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a dispensing gun for dispensing viscous materials which may be of a thick liquid nature or a pasty nature, for example a mastic caulking material.

Such viscous materials are sometimes supplied in a cartridge which is open, when in use, at one end and has a discharge orifice at the other end. By suitably advancing a plunger into the cartridge from its open end the viscous material can be discharged from the discharge orifice.

According to the present invention, a dispensing gun for dispensing viscous material from a generally cylindrical cartridge comprises: a stock formed by a single generally flat plate; a cartridge holder projecting from one edge of the stock; a rod mounted in the stock by being engaged on one side by a first bridge bounded by edges generally perpendicular to the axis of the rod and by ends which merge into the remainder of the stock and being engaged on the side opposite to the said one side by two other bridges, each bounded by edges generally perpendicular to the axis of the rod and by ends which merge into the remainder of the stock, the said three bridges being spaced longitudinally along the rod with the first bridge between the other two bridges, at least one of the bridges being displaced from the general plane of the stock whereby the rod is moved longitudinally of itself with its axis extending substantially in or parallel with the plane of the stock; and means for advancing the rod longitudinally of itself.

Preferably the stock is formed from metal as by a stamping operation. In a preferred arrangement, the first bridge is displaced from the plane of the stock in one direction and the other two bridges are displaced

from the general plane of the stock in the opposite direction. Provided that the displacements are by equal amounts, the axis of the rod will thus lie in the plane of the stock.

The means for advancing the rod longitudinally of itself may comprise a movable one-way gripper arranged for reciprocation longitudinally of the rod and arranged to tilt relative to the axis of the rod between a rod-gripping position on the forward stroke of reciprocation of the gripper to advance the rod and a rod-release position on the rearward stroke of reciprocation of the gripper to return without moving the rod. A trigger may be pivotally mounted on the stock, the trigger having an actuating end which bears against the rearward side of the gripper, and the stock may include a butt extending generally transverse to the axis of the rod, the trigger, in the pulled condition, extending alongside the butt. The trigger may be formed of sheet metal and, where the stock is also formed of metal, the two are of the same thickness and may therefore be produced from the same sheet of material, possibly in the same stamping operation.

The holder may comprise two elongate members extending from the stock parallel with and on either side of the axis of the rod and an annular member connected to the ends of the elongate members remote from the stock and lying in a plane normal to the axis of the rod. Preferably, the elongate members are metal strips each having a 90° twist adjacent the stock to provide an end portion which lies flat against and is bonded to the stock, for example by spot welding. The said end portions of the two strips preferably lie on opposite sides of the stock to simplify centring of the annular member relative to the axis of the rod.

The invention may be carried into practice in various ways, but one dispensing gun embodying the invention, together with a cartridge therefor, will now be described by way of example with reference to the

accompanying drawings, in which:

Figure 1 shows a cartridge partly in side elevation and partly in longitudinal section;

Figure 2 is a side elevation of the gun;

5 Figure 3 is an end elevation of the gun viewed from the left-hand side as seen in Figure 2; and

Figure 4 is a plan view of the gun.

10 The cartridge 1 shown in Figure 1 has a generally cylindrical body 2 containing a viscous material 3 such as a caulking mastic. The cylindrical body is open at one end and contains a free cup-shaped piston 4 which is slidable along the length of the body 2. The

15 opposite end of the cartridge is constricted to form a shoulder 5 leading to a nozzle 6 having an open end closed by a cap 7. The gun 11 shown in Figures 2 to 4 is intended to dispense material from the

20 cartridge 1 and comprises a stock 12 and a cartridge holder 13. The stock 12 is made of a single metal plate 14 which is cut and formed in a single stamping operation. The holder 13 comprises two elongate members

25 15 formed by metal strips each having a 90° twist 16 adjacent the stock 12, the end portion 17 of each strip being bonded to the stock 12 by spot welding indicated by the circle 18. The opposite ends of the strips 15 are joined by spot welding to an annular

30 generally cup-shaped member 19 having a large opening 21 in its base.

A rod 22 is mounted on the stock 12 for movement longitudinally of itself and with its axis lying midway between the two strips

35 15. At one end of the rod 22 there is a plunger 23, while the other end is formed as a hook 24 by which the gun may be suspended when it is not in use and which acts as a handle by which the rod 22 may be moved longitudinally.

The stock 12 has a large central aperture 25 and on either side there are slits 26 and 27 to form four straps or bridges 28, 29, 30 and

45 31. The outer bridges 28 and 31 are deformed out of the general plane of the plate 14 towards the viewer as seen in Figure 2, while the bridges 29 and 30 are deformed out of the general plane of the

50 plate 14 in a direction away from the viewer. The rod 22 is passed through the slits 26 and 27 so that the rod is supported on one side by the bridges 28 and 31, while it is supported on the other side by the bridges 29 and 30

55 both of which lie between the bridges 28 and 31. This provides a very simple and cheap, but effective, means of mounting the rod for longitudinal movement.

The rod can be moved incrementally by a

60 mechanism comprising a gripper plate 41 having an opening through which the rod passes and which is only slightly larger than the rod. The gripper plate 41 is guided by the aperture 25 and is biased to the right as

65 seen in Figure 2 by a compression spring 42

surrounding the rod 22. The gripper plate 41 can be tilted and advanced by means of a trigger 43 pivoted on the stock 12 by a rivet 44, the trigger 43 having an actuating end 45 to engage the gripper plate 41. The trigger

70 43 is made of the same sheet metal as the stock 12 and is produced in the same stamping operation. The stock 12 has an integral butt portion 46 which extends downwardly and generally perpendicularly to the axis of the rod 22 and, when the trigger 43 is pulled, the trigger lies generally alongside the butt portion 46. The edges of the trigger 43 and of the butt portion 46 which are engaged by the fingers and palm of an operator have protective plastics

75 channels 47 and 48 which are retained thereon by the resilience of the plastics and/or by an adhesive.

Return travel of the rod 22 is normally prevented by a catch 51 which is an apertured plate similar to the gripper plate 41 and is biased to the rod by a spring 52, its upper edge being trapped by a nose 53 on the stock 12.

In use, with the trigger 43 released, the catch plate 51 is depressed by a thumb and the rod 22 is fully retracted by pulling on the handle 24. The cartridge 1 is then inserted into the holder with the shoulder 5 engaging the inner surface of the bottom of the cup-shaped annular member 19 and with the nozzle 6 projecting through the opening 21 in this member. The rod 22 is then advanced by successive squeezes and releases of the trigger 43 until the plunger 23 engages the piston 4 in the cartridge 1. When it is required to dispense the contents of the cartridge, the trigger is squeezed, thus advancing the piston 4 and expressing the mastic 3 through the nozzle 6. When the cartridge is exhausted, the rod 22 is again retracted and the empty cartridge is replaced by a full one.

WHAT WE CLAIM IS:—

110 1. A dispensing gun for dispensing viscous material from a generally cylindrical cartridge, the gun comprising: a stock formed by a single generally flat plate; a cartridge holder projecting from one edge

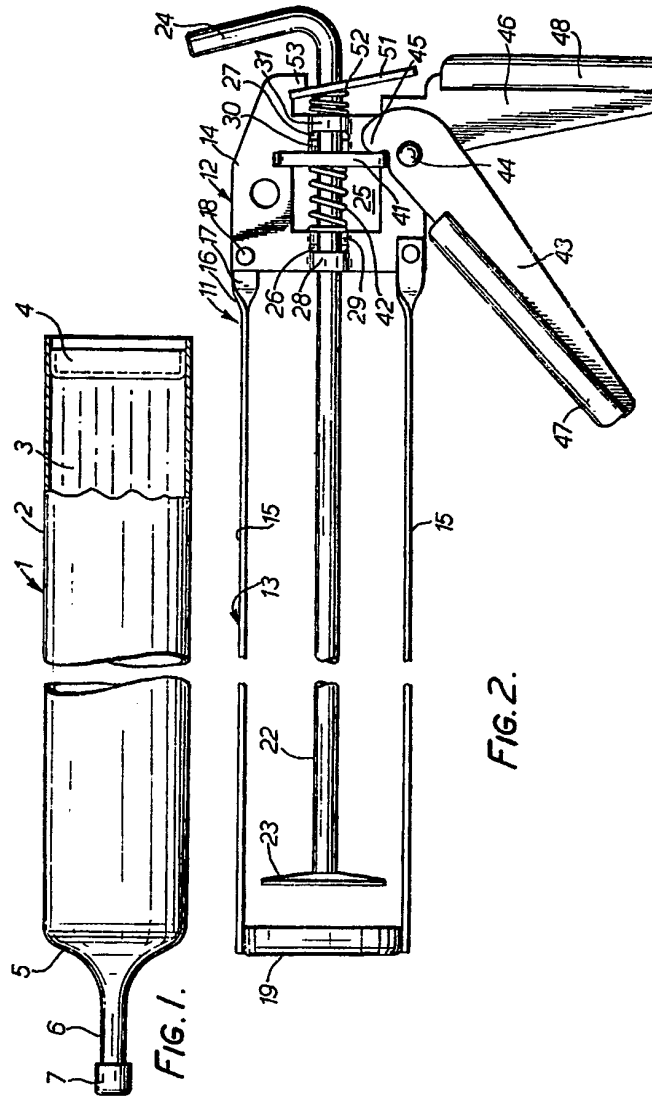
115 of the stock; a rod mounted in the stock by being engaged on one side by a first bridge bounded by edges generally perpendicular to the axis of the rod and by ends which merge into the remainder of the stock and being engaged on the side opposite to the said one side by two other bridges, each bounded by edges generally perpendicular to the axis of the rod and by ends which merge into the remainder of the stock, the

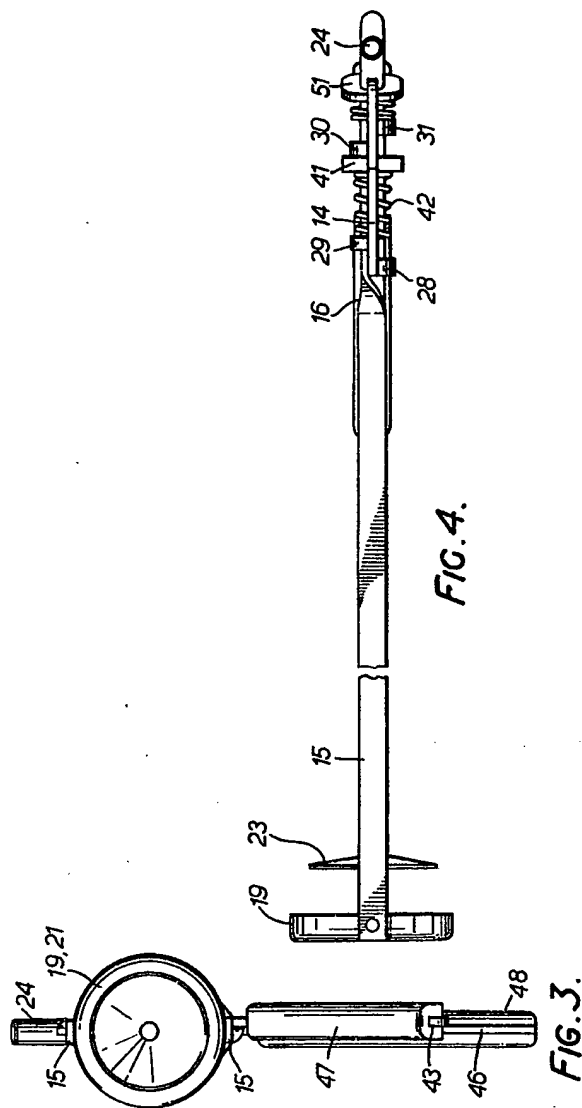
120 said three bridges being spaced longitudinally along the rod with the first bridge between the other two bridges, at least one of the bridges being displaced

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- from the general plane of the stock whereby the rod is moved longitudinally of itself with its axis extending substantially in or parallel with the plane of the stock; and means for advancing the rod longitudinally of itself.
- 5 2. A dispensing gun as claimed in Claim 1 in which the stock is formed from metal.
3. A dispensing gun as claimed in Claim 1 or Claim 2 in which the first bridge is displaced from the plane of the stock in one direction and the other two bridges are displaced from the plane of the stock in the opposite direction.
- 10 4. A dispensing gun as claimed in Claim 1 or Claim 2 or Claim 3 in which the means for advancing the rod longitudinally of itself comprises a movable one-way gripper arranged for reciprocation longitudinally of the rod and arranged to tilt relative to the axis of the rod between a rod-gripping position on the forward stroke of reciprocation of the gripper to advance the rod and a rod-release position on the rearward stroke of reciprocation of the gripper to return without moving the rod.
- 15 5. A dispensing gun as claimed in Claim 4 in which the gripper comprises a plate member having an aperture which is slightly larger than the cross section of the rod and is located in an aperture in the stock.
- 20 6. A dispensing gun as claimed in Claim 4 or Claim 5 in which a trigger is pivotally mounted on the stock, the trigger having an actuating end which bears against the rearward side of the gripper.
- 25 7. A dispensing gun as claimed in Claim 6 in which the stock includes a butt extending generally transverse to the axis of the rod and the trigger, in the pulled condition, extends alongside the butt.
- 30 8. A dispensing gun as claimed in Claim 6 or Claim 7 in which the trigger is formed from sheet metal.
9. A dispensing gun as claimed in Claim 8 in which the sheet metal of the trigger is the same thickness as the plate.
- 35 10. A dispensing gun as claimed in any of Claims 6 to 9 in which a spring biased catch is provided at the rear of the stock to prevent the rod from being moved rearwardly when the trigger is released so that by pulling and releasing the trigger a plurality of times the rod can be advanced in a succession of forward steps.
- 40 11. A dispensing gun as claimed in any of the preceding claims in which the holder comprises two elongate members extending from the stock parallel with and on either side of the axis of the rod and an annular member connected to the ends of the elongate members remote from the stock and lying in a plane normal to the axis of the rod.
- 45 12. A dispensing gun as claimed in Claim 11 in which the elongate members are metal strips each having a 90° twist adjacent the stock to provide an end portion which lies flat against and is bonded to the stock.
- 50 13. A dispensing gun as claimed in Claim 12 in which the said end portions of the two strips lie on opposite sides of the stock.
- 55 14. A dispensing gun as claimed in Claim 12 and Claim 2 or in Claim 13 and Claim 2 in which the bonding is by spot welding.
- 60 15. A dispensing gun for dispensing a viscous material substantially as described herein with reference to the accompanying drawings.
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